

Plug-In Frequency Mixer

SBL-3+

Level 7 (LO Power +7 dBm) 0.025 to 200 MHz

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

LO	8
RF	1
IF	3,4 [^]
GROUND	2,5,6,7
CASE GROUND	2

[^] pins must be connected together externally

Features

- excellent conversion loss, 4.81 dB typ.
- high L-R isolation, 45 dB typ. L-I isolation, 40 dB typ.
- rugged welded construction

Applications

- VHF
- defense & federal communications



Generic photo used for illustration purposes only

CASE STYLE: A06

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

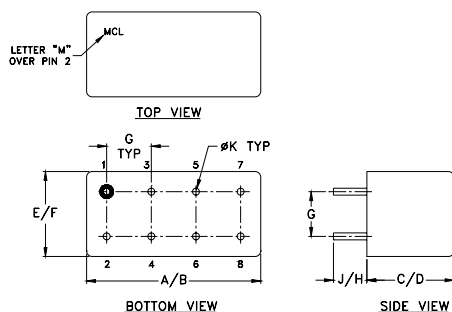
Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)					
LO/RF f_L - f_U	IF	Mid-Band m		Total Range Max.		L		M		U		L		M		U	
		$\bar{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
.025-200	DC-200	4.81	.05	7.5	8.5	55	50	45	30	35	25	45	35	40	30	30	20

1 dB COMP.: +1 dBm typ.

L = low range [f_L to 10 f_L] M = mid range [10 f_L to $f_U/2$] U = upper range [$f_U/2$ to f_U]
m= mid band [$2f_L$ to $f_U/2$]

Outline Drawing



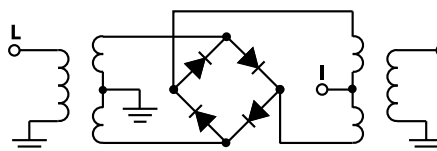
Outline Dimensions (inch/mm)

A	B	C	D	E	F
.770	.800	.285	.310	.370	.400
19.56	20.32	7.24	7.87	9.40	10.16
G	H	J	K		wt
.200	.20	.14	.031		grams
5.08	5.08	3.56	0.79		5.2

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO					
		LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
0.03	30.03	8.41	70.32	73.42	1.44	1.33
0.04	30.04	6.80	68.24	73.04	1.45	1.32
0.05	30.05	6.31	68.06	73.56	1.45	1.29
0.10	30.10	5.51	67.57	74.37	1.44	1.28
0.20	30.20	5.27	67.72	74.82	1.43	1.34
0.50	30.50	5.15	67.66	75.16	1.43	1.35
1.00	31.00	4.98	67.06	74.46	1.43	1.37
2.00	32.00	4.89	66.83	74.03	1.42	1.37
5.00	35.00	4.86	66.56	72.56	1.40	1.36
10.00	40.00	4.93	66.04	69.54	1.39	1.36
20.00	50.00	5.06	64.65	63.95	1.37	1.35
30.79	60.79	5.13	63.14	60.24	1.35	1.36
38.48	68.48	5.16	62.80	57.90	1.33	1.36
50.00	80.00	5.09	61.63	53.78	1.29	1.39
76.94	46.94	4.97	58.56	48.75	1.26	1.41
100.00	70.00	4.81	58.22	46.67	1.26	1.45
123.09	93.09	4.85	52.38	44.01	1.22	1.49
146.16	116.16	4.94	58.82	46.22	1.19	1.51
176.93	146.93	5.26	51.25	39.55	1.17	1.55
200.00	170.00	5.36	44.86	38.02	1.18	1.60

Electrical Schematic



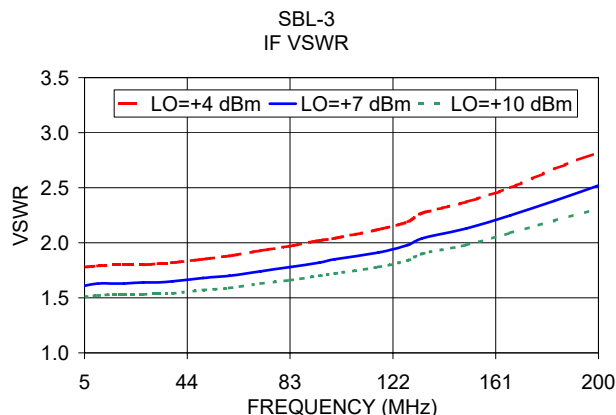
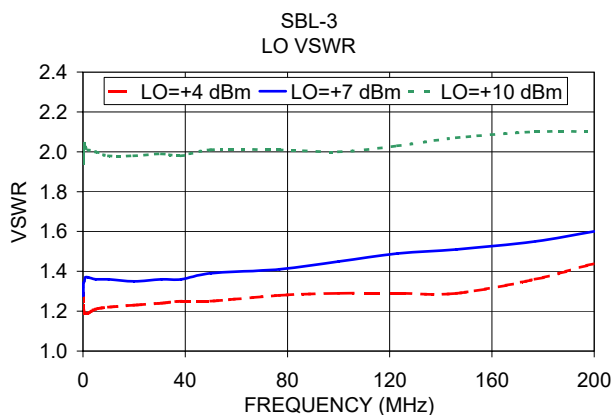
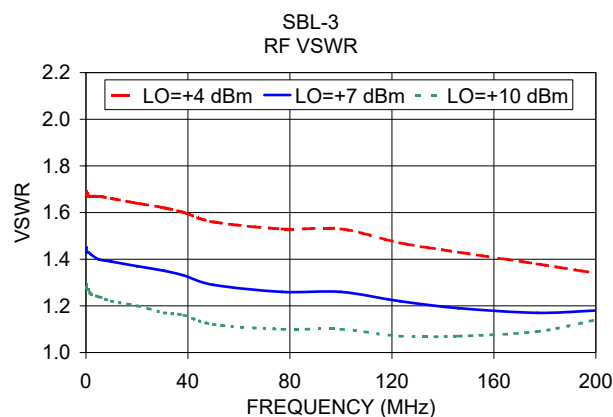
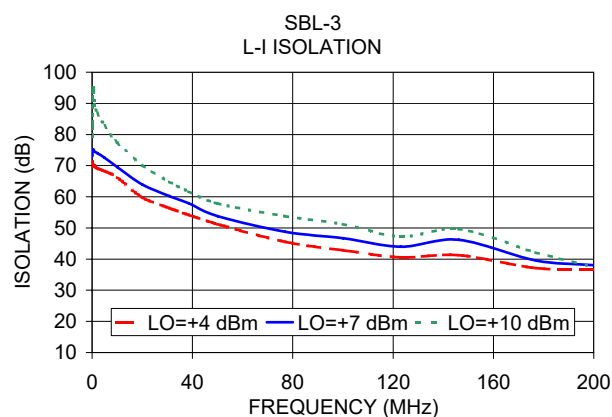
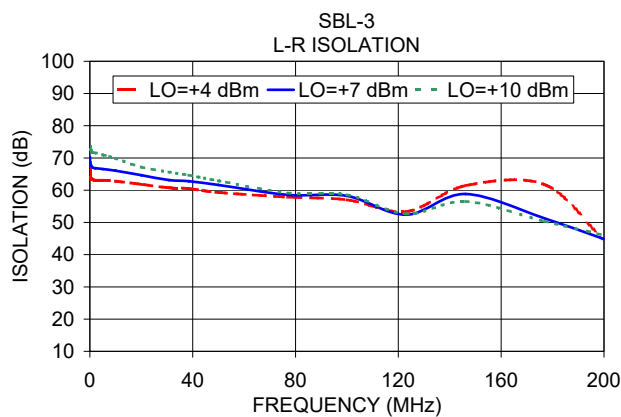
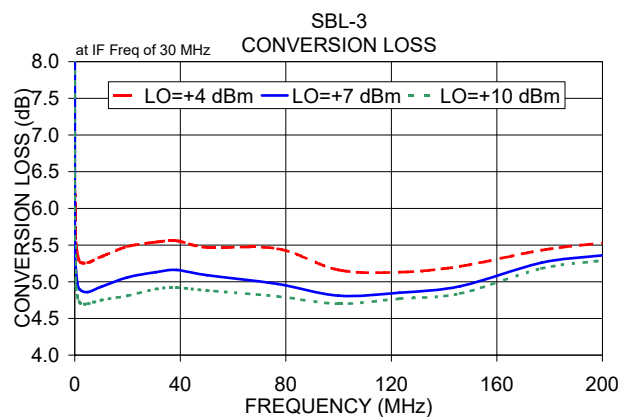
Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
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Frequency Mixer

SBL-3+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
+4	+7	+10	+4	+7	+10	+4	+7	+10	+4	+7	+10			
0.03	30.0	9.03	8.41	8.05	10.1	40.1	15.62	15.45	14.85	10.1	40.1	0.37	0.18	0.08
0.04	30.0	7.34	6.80	6.48	21.4	51.4	16.02	15.63	14.40	21.4	51.4	0.22	0.10	0.03
0.05	30.1	6.79	6.31	6.01	32.7	62.7	14.19	13.84	13.14	32.7	62.7	0.33	0.18	0.05
0.10	30.1	5.94	5.51	5.27	43.9	73.9	13.81	13.16	13.28	43.9	73.9	0.28	0.07	0.06
0.2	30.2	5.67	5.27	5.02	55.2	85.2	13.65	12.41	14.31	55.2	85.2	0.33	0.16	0.08
0.5	30.5	5.53	5.15	4.92	66.5	96.5	11.89	12.21	15.62	66.5	96.5	0.22	0.14	0.08
1.0	31.0	5.38	4.98	4.80	77.8	107.8	11.05	11.54	14.61	77.8	107.8	0.37	0.15	0.07
2.0	32.0	5.27	4.89	4.71	89.1	119.1	10.86	14.36	24.33	89.1	119.1	0.35	0.15	0.08
5.0	35.0	5.26	4.86	4.70	100.4	130.4	11.76	19.58	14.84	100.4	130.4	0.44	0.19	0.11
10.0	40.0	5.34	4.93	4.75	111.6	141.6	11.56	18.95	15.74	111.6	141.6	0.31	0.22	0.14
21.4	51.4	5.31	4.86	4.71	122.9	152.9	10.47	14.54	18.95	122.9	152.9	0.35	0.19	0.16
43.9	73.9	5.44	5.03	4.86	134.2	164.2	10.03	13.88	15.00	134.2	164.2	0.29	0.15	0.13
55.2	85.2	5.33	4.98	4.80	145.5	175.5	10.09	15.41	15.30	145.5	175.5	0.42	0.16	0.11
66.5	96.5	5.30	4.99	4.85	156.8	186.8	10.51	20.30	18.59	156.8	186.8	0.46	0.19	0.13
77.8	107.8	5.30	5.02	4.87	168.0	198.0	10.04	21.93	16.03	168.0	198.0	0.48	0.23	0.14
100.4	130.4	5.32	4.93	4.80	179.3	209.3	12.44	16.45	12.13	179.3	209.3	0.49	0.28	0.14
111.6	141.6	5.39	4.98	4.81	190.6	220.6	14.92	12.45	11.22	190.6	220.6	0.53	0.38	0.14
122.9	152.9	5.47	5.10	4.91	201.9	231.9	8.95	10.61	11.41	201.9	231.9	0.53	0.48	0.21
134.2	164.2	5.52	5.21	5.03	213.2	243.2	6.52	7.32	10.99	213.2	243.2	0.49	0.45	0.31
156.8	186.8	5.64	5.32	5.17	224.5	254.5	4.93	4.41	6.50	224.5	254.5	0.52	0.43	0.31
168.0	198.0	5.73	5.32	5.17	235.7	265.7	4.38	3.62	3.90	235.7	265.7	0.63	0.54	0.39
179.3	209.3	5.82	5.39	5.27	247.0	277.0	4.40	3.74	3.87	247.0	277.0	0.66	0.53	0.39
190.6	220.6	5.94	5.47	5.36	258.3	288.3	4.80	4.26	4.60	258.3	288.3	0.76	0.59	0.44
213.2	243.2	6.28	5.91	5.61	269.6	299.6	5.30	4.73	5.48	269.6	299.6	0.68	0.46	0.32
224.5	254.5	6.53	6.15	5.90	280.9	310.9	5.11	4.64	5.15	280.9	310.9	0.75	0.53	0.41
235.7	265.7	6.52	6.15	5.95	292.2	322.2	5.68	5.28	5.56	292.2	322.2	0.61	0.43	0.33
247.0	277.0	6.60	6.29	6.13	303.4	333.4	5.91	5.10	5.93	303.4	333.4	0.67	0.54	0.41
269.6	299.6	6.80	6.53	6.31	314.7	344.7	7.21	6.06	7.00	314.7	344.7	0.67	0.52	0.38
280.9	310.9	6.79	6.46	6.28	326.0	356.0	6.89	5.79	8.03	326.0	356.0	0.77	0.68	0.46
292.2	322.2	7.05	6.73	6.53	337.3	367.3	7.61	6.57	9.62	337.3	367.3	0.72	0.64	0.38
303.4	333.4	7.05	6.67	6.50	348.6	378.6	7.41	7.54	11.31	348.6	378.6	0.81	0.77	0.46
326.0	356.0	7.34	6.73	6.65	359.8	389.8	8.20	9.14	12.75	359.8	389.8	0.80	0.77	0.42
337.3	367.3	7.55	7.02	6.94	371.1	401.1	8.09	9.44	11.07	371.1	401.1	1.01	0.85	0.50
348.6	378.6	7.62	6.99	6.98	382.4	412.4	8.25	9.11	11.13	382.4	412.4	0.97	0.78	0.45
359.8	389.8	7.93	7.37	7.39	393.7	423.7	7.39	9.20	11.01	393.7	423.7	0.99	0.78	0.43
382.4	412.4	8.64	7.93	8.12	405.0	435.0	6.89	10.37	10.80	405.0	435.0	0.99	0.66	0.36
393.7	423.7	9.06	8.30	8.53	416.3	446.3	5.97	9.56	8.23	416.3	446.3	1.07	0.66	0.38
405.0	435.0	9.70	8.94	9.23	427.5	457.5	5.28	9.70	7.90	427.5	457.5	1.32	0.71	0.47
438.8	468.8	11.51	10.21	10.43	438.8	468.8	4.62	10.83	8.51	438.8	468.8	1.47	0.86	0.66
450.1	480.1	12.29	10.75	10.86	450.1	480.1	4.50	10.32	10.01	450.1	480.1	1.81	1.10	0.82

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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED • RoHS compliant

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Frequency Mixer

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=100.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=200.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
90.0	10.1	5.36	10.0	20.1	4.78	190.0	10.1	6.45
87.9	12.2	5.32	14.6	24.7	4.68	185.4	14.7	6.42
85.9	14.2	5.34	19.2	29.3	4.62	180.8	19.3	6.30
83.8	16.3	5.30	23.8	33.9	4.61	176.2	23.9	6.19
81.8	18.3	5.26	28.5	38.6	4.60	171.5	28.6	6.11
79.7	20.4	5.22	33.1	43.2	4.69	166.9	33.2	5.99
77.7	22.4	5.17	37.7	47.8	4.67	162.3	37.8	5.92
75.6	24.5	5.17	42.3	52.4	4.73	157.7	42.4	5.92
73.6	26.5	5.18	46.9	57.0	4.77	153.1	47.0	5.89
71.5	28.6	5.17	51.5	61.6	4.76	148.5	51.6	5.86
69.5	30.6	5.16	56.2	66.3	4.74	143.8	56.3	5.85
67.4	32.7	5.14	60.8	70.9	4.80	139.2	60.9	5.77
65.4	34.7	5.09	65.4	75.5	4.84	134.6	65.5	5.73
63.3	36.8	5.07	70.0	80.1	4.81	130.0	70.1	5.74
61.3	38.8	5.06	74.6	84.7	4.90	125.4	74.7	5.73
59.2	40.9	5.04	79.2	89.3	4.96	120.8	79.3	5.71
57.2	42.9	5.06	83.8	93.9	4.95	116.2	83.9	5.68
55.1	45.0	5.05	88.5	98.6	4.92	111.5	88.6	5.66
53.1	47.0	5.02	93.1	103.2	5.00	106.9	93.2	5.60
51.0	49.1	4.91	97.7	107.8	5.01	102.3	97.8	5.51
49.0	51.1	4.93	102.3	112.4	5.03	97.7	102.4	5.53
46.9	53.2	4.98	106.9	117.0	5.08	93.1	107.0	5.55
44.9	55.2	4.99	111.5	121.6	5.05	88.5	111.6	5.58
42.8	57.3	4.98	116.2	126.3	5.03	83.8	116.3	5.58
40.8	59.3	5.00	120.8	130.9	5.03	79.2	120.9	5.58
38.7	61.4	5.01	125.4	135.5	5.05	74.6	125.5	5.54
36.7	63.4	5.01	130.0	140.1	5.06	70.0	130.1	5.55
34.6	65.5	5.00	134.6	144.7	5.18	65.4	134.7	5.58
32.6	67.5	4.99	139.2	149.3	5.32	60.8	139.3	5.61
30.5	69.6	4.98	143.8	153.9	5.41	56.2	143.9	5.60
28.5	71.6	4.99	148.5	158.6	5.55	51.5	148.6	5.63
26.4	73.7	4.98	153.1	163.2	5.61	46.9	153.2	5.58
24.4	75.7	4.97	157.7	167.8	5.67	42.3	157.8	5.54
22.3	77.8	4.97	162.3	172.4	5.75	37.7	162.4	5.52
20.3	79.8	5.00	166.9	177.0	5.81	33.1	167.0	5.50
18.2	81.9	4.96	171.5	181.6	5.88	28.5	171.6	5.53
16.2	83.9	5.00	176.2	186.3	5.95	23.8	176.3	5.53
14.1	86.0	5.02	180.8	190.9	5.90	19.2	180.9	5.46
12.1	88.0	5.05	185.4	195.5	5.93	14.6	185.5	5.55
10.0	90.1	5.09	190.0	200.1	5.95	10.0	190.1	5.64

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
0.03	68.38	70.32	73.64	71.48	73.42	79.24
0.04	64.91	68.24	72.87	70.01	73.04	81.87
0.05	64.32	68.06	72.79	69.72	73.56	83.69
0.10	63.53	67.57	72.70	69.83	74.37	88.60
0.2	63.80	67.72	72.52	69.80	74.82	91.52
0.5	63.65	67.66	72.44	70.15	75.16	95.14
1.0	63.35	67.06	71.74	69.95	74.46	89.64
2.0	63.09	66.83	71.61	69.19	74.03	87.01
5.0	63.12	66.56	70.96	68.22	72.56	82.86
10.0	62.81	66.04	69.84	66.21	69.54	77.34
21.4	70.33	70.26	69.93	63.20	61.01	59.47
43.9	65.22	67.52	68.78	56.46	56.34	56.12
55.2	62.59	65.88	67.90	52.23	53.47	54.32
66.5	60.87	63.72	66.70	49.88	51.64	52.92
77.8	61.24	66.65	69.26	47.99	49.31	51.01
100.4	57.53	58.52	60.47	44.74	46.80	49.13
111.6	61.33	66.90	67.76	44.01	45.41	47.21
122.9	58.58	74.47	66.94	43.55	45.12	46.53
134.2	53.95	60.99	59.32	43.47	45.30	46.27
156.8	48.86	52.03	56.43	42.89	45.25	46.86
168.0	46.83	49.86	53.54	41.12	43.21	44.36
179.3	46.39	49.62	53.88	39.66	41.86	42.75
190.6	46.23	49.28	53.13	38.75	41.06	41.69
213.2	47.20	51.64	60.08	37.75	40.49	39.17
224.5	49.28	55.83	52.36	40.02	41.26	37.83
235.7	51.37	57.79	51.66	43.24	42.40	37.84
247.0	53.10	61.20	54.82	44.47	43.13	38.72
269.6	51.42	52.16	49.83	38.96	37.16	35.33
280.9	52.59	51.93	49.31	38.14	36.11	34.22
292.2	54.14	50.67	46.54	38.19	35.91	34.04
303.4	57.11	49.88	44.62	38.04	35.14	32.94
326.0	54.30	48.30	40.56	37.26	34.86	30.04
337.3	46.74	44.00	36.98	35.52	34.71	27.96
348.6	42.24	41.24	33.67	32.76	32.60	25.24
359.8	38.65	38.50	31.63	29.98	30.30	23.52
382.4	32.50	32.94	28.02	25.75	26.55	21.65
393.7	29.94	30.76	26.42	23.99	25.35	20.77
405.0	27.47	28.52	25.06	22.22	23.67	19.91
438.8	22.86	22.82	21.55	19.57	19.69	17.85
450.1	22.66	21.96	20.91	19.94	19.39	17.66

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	32.15	34.55	34.02
21.4	51.4	29.36	29.37	28.91
32.7	62.7	26.03	26.55	26.88
43.9	73.9	24.32	24.82	25.27
55.2	85.2	23.36	23.78	24.16
66.5	96.5	22.62	23.15	23.46
77.8	107.8	22.23	22.96	23.68
89.1	119.1	21.64	22.81	23.67
100.4	130.4	21.34	22.34	23.17
111.6	141.6	21.53	22.46	23.16
122.9	152.9	21.85	22.61	23.24
134.2	164.2	22.45	23.19	23.64
145.5	175.5	23.15	24.08	24.49
156.8	186.8	21.74	22.68	23.08
168.0	198.0	19.97	20.62	21.07
179.3	209.3	18.33	18.82	19.15
190.6	220.6	16.83	17.17	17.34
201.9	231.9	15.73	15.96	16.19
213.2	243.2	15.02	15.15	15.35
224.5	254.5	14.41	14.48	14.69
235.7	265.7	14.25	14.13	14.34
247.0	277.0	13.97	13.85	13.91
258.3	288.3	13.67	13.52	13.58
269.6	299.6	13.68	13.52	13.73
280.9	310.9	13.44	13.28	13.52
292.2	322.2	13.58	13.49	13.71
303.4	333.4	13.41	13.34	13.55
314.7	344.7	13.37	13.27	13.34
326.0	356.0	12.94	12.84	12.74
337.3	367.3	12.63	12.38	12.02
348.6	378.6	12.18	11.70	11.28
359.8	389.8	11.43	10.96	10.50
371.1	401.1	10.92	10.35	9.73
382.4	412.4	10.21	9.56	8.91
393.7	423.7	9.59	8.73	8.24
405.0	435.0	8.76	7.83	7.44
416.3	446.3	8.03	7.08	6.67
427.5	457.5	7.41	6.51	6.17
438.8	468.8	6.98	6.21	5.95
450.1	480.1	6.51	5.98	5.73

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=200.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
5.0	35.0	1.67	1.44	1.28	5.0	1.25	1.33	2.01	5.0	1.78	1.61	1.51
10.0	40.0	1.68	1.45	1.29	10.0	1.25	1.32	1.99	10.0	1.79	1.63	1.52
21.4	51.4	1.54	1.31	1.19	21.4	1.04	1.55	2.28	14.9	1.99	1.81	1.65
32.7	62.7	1.52	1.33	1.21	32.7	1.06	1.57	2.38	19.7	2.04	1.85	1.68
43.9	73.9	1.49	1.30	1.19	43.9	1.06	1.58	2.34	24.6	2.07	1.85	1.70
55.2	85.2	1.43	1.26	1.15	55.2	1.08	1.55	2.25	29.5	2.06	1.87	1.70
66.5	96.5	1.41	1.23	1.13	66.5	1.09	1.51	2.18	34.4	2.09	1.88	1.74
77.8	107.8	1.38	1.20	1.10	77.8	1.08	1.49	2.13	39.2	2.06	1.87	1.71
89.1	119.1	1.37	1.18	1.08	89.1	1.10	1.51	2.20	44.1	2.08	1.87	1.75
100.4	130.4	1.32	1.13	1.05	100.4	1.15	1.53	2.17	49.0	2.09	1.90	1.75
111.6	141.6	1.31	1.11	1.02	111.6	1.15	1.56	2.24	53.8	2.10	1.88	1.74
122.9	152.9	1.30	1.13	1.02	122.9	1.16	1.59	2.28	58.7	2.12	1.91	1.76
134.2	164.2	1.27	1.12	1.05	134.2	1.18	1.60	2.28	63.6	2.17	1.94	1.78
145.5	175.5	1.21	1.08	1.06	145.5	1.21	1.62	2.25	68.5	2.17	1.96	1.81
156.8	186.8	1.15	1.05	1.09	156.8	1.22	1.62	2.24	73.3	2.22	1.98	1.82
168.0	198.0	1.11	1.07	1.17	168.0	1.22	1.60	2.21	78.2	2.27	2.05	1.89
179.3	209.3	1.12	1.10	1.21	179.3	1.25	1.61	2.27	83.1	2.33	2.08	1.92
190.6	220.6	1.16	1.10	1.23	190.6	1.28	1.63	2.23	87.9	2.38	2.14	1.98
201.9	231.9	1.24	1.09	1.22	201.9	1.31	1.67	2.28	92.8	2.45	2.20	2.03
213.2	243.2	1.28	1.11	1.18	213.2	1.34	1.72	2.31	97.7	2.48	2.26	2.08
224.5	254.5	1.36	1.19	1.12	224.5	1.36	1.76	2.34	102.6	2.53	2.30	2.12
235.7	265.7	1.36	1.20	1.12	235.7	1.36	1.80	2.35	107.4	2.55	2.34	2.17
247.0	277.0	1.38	1.25	1.16	247.0	1.35	1.80	2.37	112.3	2.54	2.36	2.19
258.3	288.3	1.36	1.23	1.16	258.3	1.33	1.80	2.38	117.2	2.60	2.37	2.22
269.6	299.6	1.40	1.27	1.19	269.6	1.33	1.83	2.46	122.1	2.60	2.40	2.23
280.9	310.9	1.37	1.25	1.16	280.9	1.34	1.82	2.43	126.9	2.62	2.42	2.25
292.2	322.2	1.43	1.30	1.19	292.2	1.35	1.86	2.48	131.8	2.65	2.44	2.28
303.4	333.4	1.41	1.28	1.19	303.4	1.37	1.88	2.50	136.7	2.68	2.46	2.30
314.7	344.7	1.49	1.35	1.28	314.7	1.40	1.89	2.49	141.5	2.69	2.49	2.36
326.0	356.0	1.48	1.34	1.28	326.0	1.41	1.89	2.48	146.4	2.72	2.54	2.40
337.3	367.3	1.56	1.42	1.38	337.3	1.44	1.89	2.45	151.3	2.80	2.61	2.46
348.6	378.6	1.57	1.45	1.42	348.6	1.46	1.91	2.46	156.2	2.86	2.67	2.53
359.8	389.8	1.67	1.55	1.53	359.8	1.48	1.92	2.44	161.0	2.93	2.74	2.59
371.1	401.1	1.68	1.57	1.56	371.1	1.52	1.94	2.44	165.9	2.97	2.78	2.64
382.4	412.4	1.75	1.64	1.64	382.4	1.56	1.97	2.45	170.8	2.99	2.82	2.68
393.7	423.7	1.82	1.67	1.67	393.7	1.61	1.99	2.45	175.6	3.02	2.87	2.73
405.0	435.0	1.91	1.72	1.71	405.0	1.66	2.01	2.46	180.5	3.06	2.91	2.76
416.3	446.3	1.94	1.74	1.71	416.3	1.71	2.01	2.42	185.4	3.06	2.91	2.77
427.5	457.5	2.04	1.80	1.74	427.5	1.77	2.04	2.41	190.3	3.07	2.93	2.79
438.8	468.8	2.11	1.82	1.73	438.8	1.86	2.09	2.45	195.1	3.07	2.93	2.80
450.1	480.1	2.16	1.86	1.73	450.1	1.95	2.13	2.45	200.0	3.06	2.91	2.78

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	18	31	16	30	19	38	38	49	58	58
1	-	17	+0	25	15	29	23	34	30	45	33	56
2	>100	60	57	67	57	58	61	69	55	63	73	70
3	>100	58	52	61	58	61	63	58	54	74	55	>81
4	>100	>81	80	>81	61	>81	>81	>81	>81	>81	>81	>81
5	>100	>81	74	80	77	68	75	>81	76	>81	74	>81
6	>100	>81	>81	>81	>81	>81	81	>81	>81	>81	>81	>81
7	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
8	>100	>81	>81	>81	>81	>81	>81	66	80	>81	>81	>81
9	>100	>81	>81	>81	>81	>81	>81	>81	57	>81	>81	>81
10	>100	>81	>81	>81	>81	>81	>81	>81	75	74	>81	>81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 100.1 MHz; -14.00 dBm.
LO IN: 130.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -18.73 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	27	40	26	40	31	52	52	65	65	73
1	-	18	+0	27	14	33	23	37	38	49	41	64
2	>100	61	51	64	54	56	55	69	50	62	69	74
3	>100	46	41	48	47	48	48	46	49	55	48	62
4	>100	74	65	69	64	75	68	69	70	86	69	76
5	>100	68	60	59	62	61	63	62	60	61	56	77
6	>100	82	85	81	79	80	>91	80	79	85	76	83
7	>100	>91	67	76	87	68	69	75	68	70	67	76
8	>100	89	88	90	86	>91	>91	82	84	89	>91	89
9	>100	>91	79	>91	76	79	85	78	70	86	77	81
10	>100	>91	>91	>91	>91	>91	>91	>91	89	80	91	>91
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 100.1 MHz; -4.00 dBm.
LO IN: 130.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -9.07 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.

2. + entry denotes harmonics are in (dBc) above IF OUTPUT.

3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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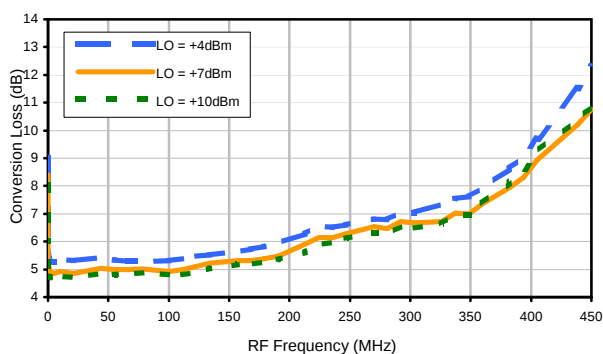
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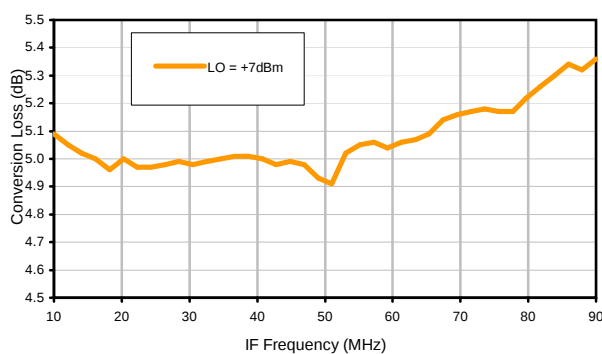


Typical Performance Curves

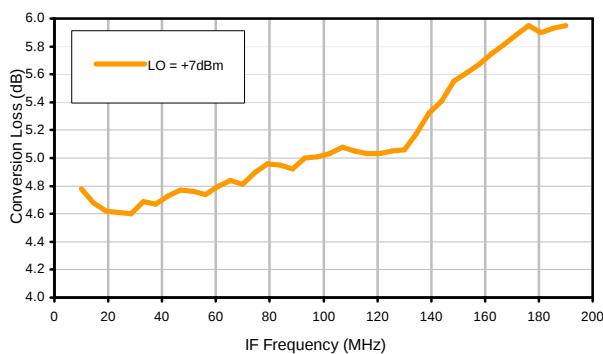
Conversion Loss @ IF=30MHz



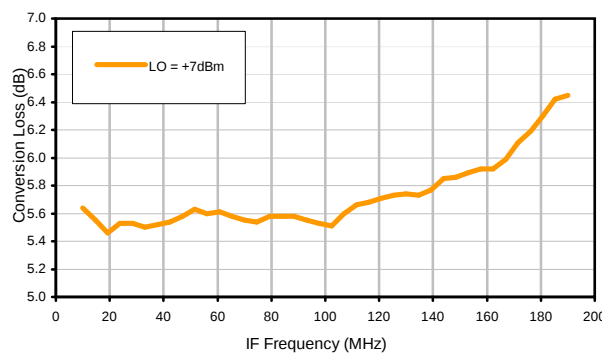
Conversion Loss vs. IF @ RF=100.1MHz



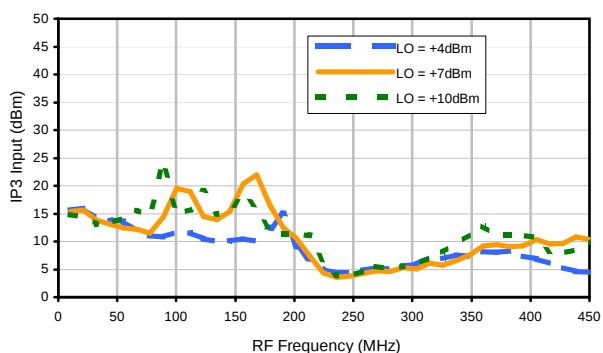
Conversion Loss vs. IF @ RF=10.1MHz



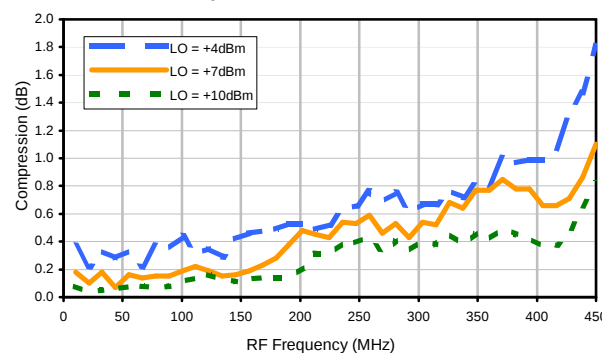
Conversion Loss vs. IF @ RF=200.1MHz



IP3 Input

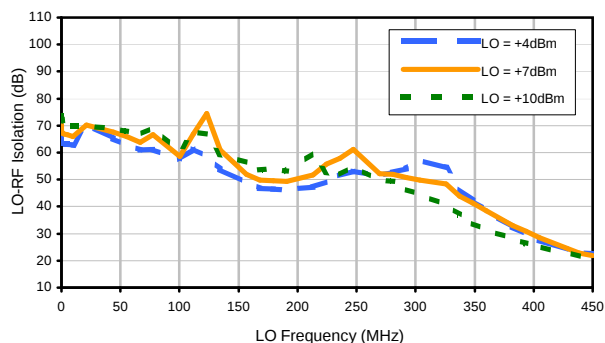


Compression @ RF IN=+1dBm

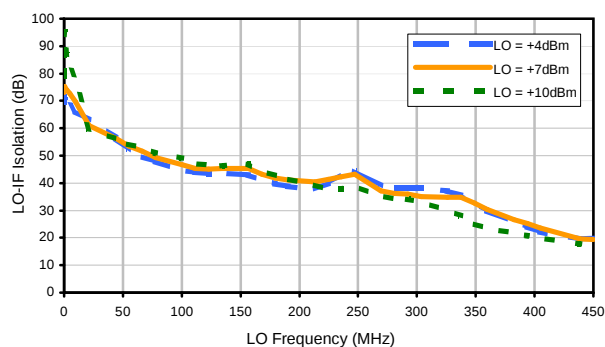


Typical Performance Curves

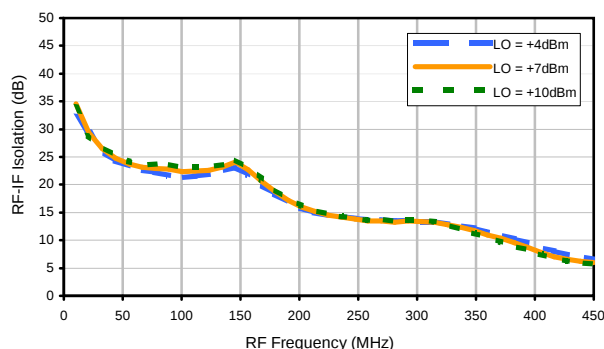
LO-RF Isolation



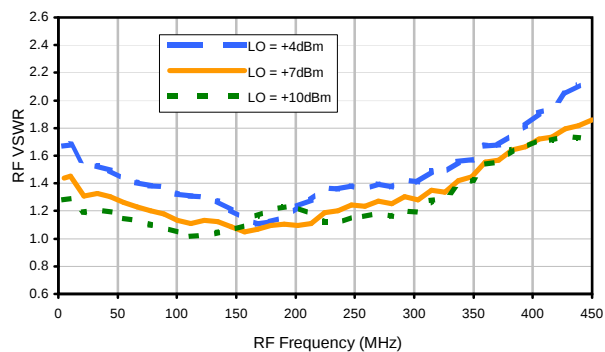
LO-IF Isolation



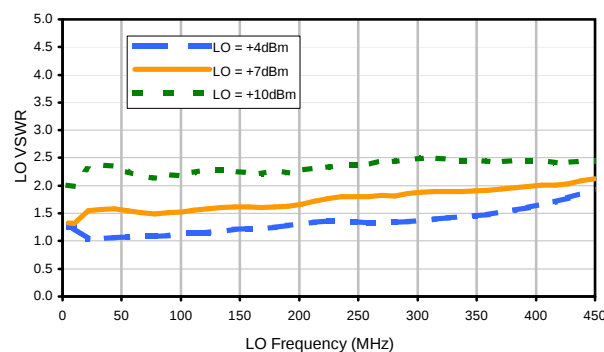
RF-IF Isolation



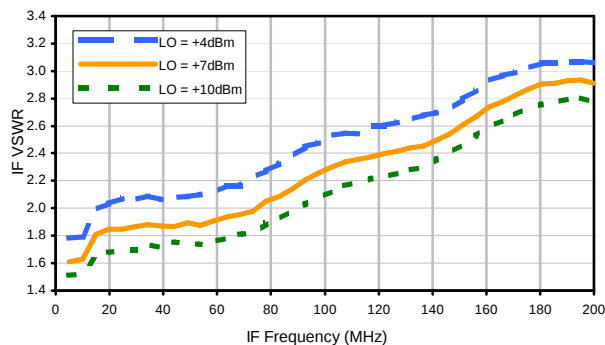
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	18	31	16	30	19	38	38	49	58	58
1	-	17	+0	25	15	29	23	34	30	45	33	56
2	>100	60	57	67	57	58	61	69	55	63	73	70
3	>100	58	52	61	58	61	63	58	54	74	55	>81
4	>100	>81	80	>81	61	>81	>81	>81	>81	>81	>81	>81
5	>100	>81	74	80	77	68	75	>81	76	>81	74	>81
6	>100	>81	>81	>81	>81	>81	81	>81	>81	>81	>81	>81
7	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
8	>100	>81	>81	>81	>81	>81	>81	66	80	>81	>81	>81
9	>100	>81	>81	>81	>81	>81	>81	>81	57	>81	>81	>81
10	>100	>81	>81	>81	>81	>81	>81	>81	75	74	>81	>81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 100.1 MHz; -14.00 dBm.
LO IN: 130.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -18.73 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	27	40	26	40	31	52	52	65	65	73
1	-	18	+0	27	14	33	23	37	38	49	41	64
2	>100	61	51	64	54	56	55	69	50	62	69	74
3	>100	46	41	48	47	48	48	46	49	55	48	62
4	>100	74	65	69	64	75	68	69	70	86	69	76
5	>100	68	60	59	62	61	63	62	60	61	56	77
6	>100	82	85	81	79	80	>91	80	79	85	76	83
7	>100	>91	67	76	87	68	69	75	68	70	67	76
8	>100	89	88	90	86	>91	>91	82	84	89	>91	89
9	>100	>91	79	>91	76	79	85	78	70	86	77	81
10	>100	>91	>91	>91	>91	>91	>91	>91	89	80	91	>91
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 100.1 MHz; -4.00 dBm.
LO IN: 130.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -9.07 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.

2. + entry denotes harmonics are in (dBc) above IF OUTPUT.

3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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A01
A04
A05
A06

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A01	.770 (19.56)	.800 (20.32)	.385 (9.78)	.400 (10.16)	.370 (9.40)	.400 (10.16)	.200 (5.08)	.20 (5.08)	.14 (3.56)	.031 (.79)	5.2
A04			.200 (5.08)	.210 (5.33)							3.7
A05			.240 (6.10)	.250 (6.35)							3.7
A06			.285 (7.24)	.310 (7.87)							5.2

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Header material: C.R.S.
Pin material: #52 alloy.
Cover material: Cupro-Nickel.
- Pin finish: Electro Tin-Silver.
- Insulated spacer available. Request P/N B14-045-01.
- Tolerance on pin diameter $\pm .005$ inch.
- Glass meniscus 0.015 inch max.
- Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.



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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D